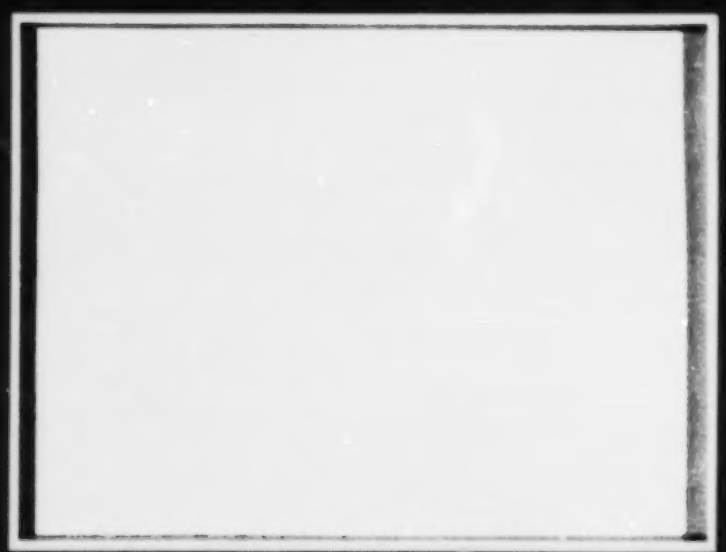

CREDA

Yukon 21

Skookum Jim Community Training

CREDA is a program which has been jointly funded by Energy, Mines and Resources, Canada and the Yukon Government, Department of Economic Development and Tourism. For more information or copies of reports contact the Energy and Mines Branch, Yukon Government, Box 2703, Whitehorse, Y1A 2C6.

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FOREWORD

The availability of secure and affordable energy supplies is a subject of national concern. Our primary energy sources are becoming more costly and less accessible. However, Canada has both the resources and the technical expertise necessary to develop renewable and alternate sources of energy.

The governments of Yukon and Canada have entered into a Conservation and Renewable Energy Agreement (CREDA) as one means of pursuing this end. Cost-shared by the Territorial and Federal Governments, CREDA has a budget of $3.3 million, and is dedicated to the development and demonstration of conservation and renewable energy technologies.

The objectives of CREDA are:

* to develop and demonstrate promising new technologies, which, when widely adopted, will exploit renewable resources, conserve energy, and/or use energy more efficiently.
* to develop broad public awareness of the potential of renewable energy and conservation technology.
* to provide opportunities for the commercial application of the technologies.
* to create economic spin-off benefits for manufacturing, industry, and commerce.
* to create employment in new or existing energy-related industries.

The project described in the following report is intended for use by the Northern Housing Industry. The information included in this manual will provide housing administrators

and building contractors in the North with a guide to energy conserving retrofit theory and proven construction techniques, which may be applicable to retrofit or new construction projects.

Special emphasis is placed upon techniques which are appropriate for remote villages and cold northern climates. These techniques are designed to use locally available materials and labour wherever possible.

EXECUTIVE SUMMARY

The Skookies II project is the second phase of an energy efficient building trades training program. Ten native trainees, one from each of the Yukon's native communities, were trained by doing the retrofit and renovation work on the Skookum Jim Friendship Centre, in Whitehorse, in the first phase. The purpose of the second phase was to have the knowledge gained in the first part applied in each of the communities. To this end, the trainees spent one month in nine communities working on retrofitting selected buildings and houses.

It was felt that phase two would have many benefits. The trainees were able to apply their knowledge and skills in their home communities. Awareness of energy efficient standards and retrofitting techniques would increase at the local level. Employment and learning opportunities would be available to band members. Better quality housing would result in a higher standard of living and a reduction in fuel oil consumption.

The work to be done in each community was determined in advance by a trainee and a Skookum Jim staff member. The houses were given a visual audit and a report was generated to determine which ones would be worked on. Each house represented a separate approach to retrofitting, resulting in the work ranging from total re-wraps to medium-level and low-level retrofits.

Résumé pour l'exécutif

Le projet "Skookies II" constitue la deuxième phase d'un programme de formation des métiers de la construction à haut rendement énergétique. Dans la première phase, dix apprentis autochtones en provenance de chacune des dix communautés autochtones du Yukon ont été formés en prenant part aux travaux de rénovation et de ré-isolation exécutés au centre Skookum Jim à Whitehorse. Le but de la deuxième phase était de faire en sorte que l'expérience acquise lors de la première phase soit mise en pratique dans chacune des communautés. A cette fin, les apprentis ont passé un mois dans neuf communautés à travailler à la rénovation et à la ré-isolation de maisons et d'édifices choisis pour le programmes.

On a cru que la phase II apporterait de nombreux bénifices. Les apprentis ont eu l'opportunité de mettre en application, dans leurs propres communautés, les connaissances et l'expérience acquises durant leur formation. Ceci entraînerait sur le plan local une plus grande connaissance des techniques de ré-isolation et des normes de rénovation à haut rendement énergétique. Des opportunités d'apprendre et de travailler s'offriraient aux membres du clan. Des maisons mieux construites offriraient un niveau de vie supérieur et entraîneraient une réduction de la consommation de mazout.

Les travaux à accomplir dans chaque communauté ont été déterminés à l'avance par un apprenti et un membre du personnel du centre Skookum Jim. Les maisons ont été inspectées visuellement et un rapport a été préparé pour déterminer lesquelles seraient rénovées. Chaque maison représentait une approche différente en matière de rénovation, ce qui a résulté en des travaux allant de la ré-isolation extérieures complète à des rénovations de moyenne et de petite envergure.

1.0 INTRODUCTION

The Skookum Jim Friendship Centre is a cross-cultural Native Friendship Centre located in Whitehorse. The Centre came into existence in 1960, utilizing monies from the Skookum Jim Trust Fund and land donated by the City of Whitehorse. The Trust Fund was established by James Mason, more commonly known as Skookum Jim, one of the co-discoverers of the original claim which triggered the Klondike Gold Rush in 1898. Skookum Jim set aside a portion of this estate for the betterment of Native people in the Yukon and money from this fund paid for the building where the Friendship Centre was originally located. In February 1984 the Friendship Centre moved into a new one half million dollar facility in central Whitehorse.

The Skookum Jim Friendship Centre has served the needs of Native and non-Native Yukoners for almost a quarter of a century. The mandate of the Centre, as established jointly by its charter of incorporation and its operational funding guidelines, is to:

1) provide services to Native people within the Yukon. These include counselling and referral services in a variety of different areas, recreation, education and advocacy.

2) provide a cross-cultural meeting ground whereby the Native and non-Native communities can become involved in joint community action programs and foster a better mutual understanding of both cultures.

3) provide employment and upgrading opportunities for unemployed persons.

The Friendship Centre is controlled by a nine member volunteer Board of Directors. Friendship Centre staff members and volunteers work in close liaison with many other private and public organizations, locally, territorially and nationally. Locally, the scope of the Centre involvement includes the Council for Yukon Indians, the Kwanlin Dun Band, the Salvation Army, Mary House, Crossroads, the Department of Health and Human Resources, Yukon Territorial Government and Health and Welfare Canada.

Current Friendship Centre programs include a drop in centre open from nine a.m. to eleven p.m. seven days a week, a counselling service for people with alcohol and drug related problems, a tutoring program in math and english for youngsters between grades seven and twelve, a visiting program at Whitehorse Correctional Centre, an information and referral service, a youth group, a series of monthly coffee houses and a retrofit renovation training program delivered at the community level. The Friendship Centre also organizes, participates in and fosters a wide variety of other programs and activities.

2.0 BACKGROUND

As the conclusion of the original capital renovation project, the Skookum Jim Friendship Centre approached the question of a continuance or extension of the training program, and began a series of discussions with a number of organizations. The organizations involved in the dicussions and extension to the training program delivered by the Skookum Jim Friendship Centre during the renovation project were the CREDA Program, Canada Employment and Immigration, the Department of Indian Affairs, the Board of Directors of the Council for Yukon Indians, and the ten trainees from the respective communities. The major area of concern expressed by all those participating in the discussion was that the training undertaken to date had not reached any conclusion. Upon consideration of the individual players involved, that being the various government agencies and departments, as well as the ten trainees, the Friendship Centre decided to extend the training program and complete in a realistic fashion the training that had been undertaken on the renovation project.

It should be kept in mind that the trainees had all remained within the training program. In discussions with the trainees as well as in formulating the ongoing training, it was felt that merit existed in taking the trainees back to their own communities and suppling a direct service to the communities as well as the extension of training.

The Skookum Jim Friendship Centre in its role as co-ordinator as well as administrator of the training extension program, negotiated with C.E.I.C., the Economic Development Branch, for the securing of funding under the General Industrial Training Program for wages for

the trainees for a period of ten months in order to facilitate ongoing training and actual housing renovations at the band level.

The trainees would travel from community to community completing four weeks of extensive high energy efficient renovation work within the communities, utilizing renovation dollars provided by the bands for materials and supplies. The Friendship Centre had also negotiated with the CREDA program, the funding for three trainers to travel with the trainees during the course of the ten month program, as well as monies for transportation. Upon completion of the training program, the trainees would not only have received additional training and upgrading skills in high energy efficient renovation work, but also fairly extensive co-ordination, supervision, and management skills in expediting and scheduling major renovation projects. The respective trainees would then be able to return to their communities as fully qualified energy efficient experts.

The ten trainees, accompanied by the trainers, completed four weeks of energy efficient renovations in each of the communities. The communities contributed renovation dollars for the purchase of materials necessary to accomplish the renovations as they were determined. This process of determination was done jointly by recommendations from the trainee from that particular community working in conjunction with the trainers and the Band Councils.

Initial contact was made by the trainee from his designated community; the trainer and the trainee travelled to that community prior to the crew's arrival, and undertook a diagnostic analysis of the housing stock, designating those units to be repaired. This diagnostic analysis

was done in conjunction with the band. The trainee then undertook the management and supervision of the crew and the renovations were completed in the trainee's community. This included such areas as:

1) the estimating of material necessary on the housing unit;
2) the expediting of the necessary material and goods;
3) the scheduling of work;
4) the supervision of the actual work to be undertaken;
5) the final reporting to the band of the work, and quality of work accomplished.

Upon completion of the work within the designated community the trainees then moved on to the next community. Prior to their arrival in the next community the trainee and trainers then proceeded to the next community and undertook the same sort of diagnostic analysis with the band. In this way, the project flowed smoothly through the course of the ten communities.

3.0 PROGRAM DEVELOPMENT

The retrofit renovation program began as a concept of the delivery of services to the rural communities, as well as an extension to the training that the ten individual carpenter trainees from the rural communities were receiving. The program was viewed in its inception as a completion of the training program as undertaken in the original renovation project of the Skookum Jim Friendship Centre.

The success rate in adult education training programs is dismal at best. This lack of success encountered by the majority of adult eduction programs is related directly to a number of factors:

1) a lack of involvement in the program by the students themselves.
2) an absence of practical application to the information being transferred to the students.
3) the ability to jointly undertake academic, or vestibule training, as well as practical hands on training.
4) the innovative maintenance of the training program.

All of the above factors were taken into consideration when developing a training outline for the program.

3.1 TRAINING PERCEPTION

The training program was viewed not only as a means of transferring of energy information to the individuals trainees, and the larger rural communities but was perceived as a vehicle of also implementing substantial concrete change within the community. This was accomplished by

the actual physical undertaking of specific retrofit renovation projects at the band level. The two focuses of the training were imperative for the success of the program. These two focuses being the actual training as undertaken by the individual trainees, as well as the physical completion of retrofit renovation projects.

The training was divided into a number of sub-components:

1) the actual transfer of energy information to the trainees
2) the skill development in the area of project management
3) the hands on application of energy conservation construction techniques

3.2 TRAINING OUTLINE

The training outline that was developed for the program outlined the four specific areas of training to be undertaken by each of the trainees. These four specific areas of training were:

1) Project Management
2) Job Foreman
3) Project Foreman
4) Camp Manager

Each specific section of the training i.e. the Project Management training, the Job Foreman training etc. was specifically designed to further increase the trainees skills in these specific areas.

PROJECT MANAGEMENT TRAINING

During the course of Project Management training the individual trainee would spend time interacting with the community and specifically the Band Council and the Chief. Once the program was fully understood at the community level the trainee would begin the assessment of housing stock at the band level.

For example, at the community of Old Crow the Project Management trainee for Old Crow, Michael Frost, went into the community of Old Crow approximately a month prior to the Old Crow project. Michael's responsibilities as a Project Management trainee were to work very closely with the Band and Council, and the architect on the two housing units that were being built for the community of Old Crow. Once the units were decided upon the material list take-offs were then undertaken by the Project Management trainee. These material lists were exhaustively reviewed with the Instructor/Advisors as well as the architect on the project. This was of utmost importance in the community of Old Crow considering the costs of materials to be air lifted to the community. Once the materials were ordered for shipment the preparatory work on the bases of the units was begun. This preparatory work consisted of the building of gravel pads to protect the perma-frost under the housing units.

Once the gravel pads were completed, the crew arrived in the community of Old Crow. Prior to their arrival Michael Frost had arranged for accommodations for the retrofit crew, the Instructor/Advisors and the cook. A camp was then established, work schedules reviewed and the actual construction of the units was begun. Michael's

job then became one of ensuring adequate materials on the various job sites, supervising the work to ensure adherence to work schedules and overall supervision and reporting to the Band Council and the Architect.

This very specific training in the area of project management skills as related to the specific designated community of the project management trainee varied with each community, the training also varied with each job to be preformed and the ability of each of the specific individual trainees. This is the uniqueness and benefical aspect of the training program.

All of the specific training of project management trainee, job foreman trainee, project foreman trainee and camp manager trainee were undertaken over and above the specific retrofit renovation training outline. This retrofit renovation training outline dealt specifically with the technical transfer of information to the individual trainees.

The training outline for the various job positions is attached under the appendices section of this report as well as the retrofit renovation training program outline.

4.0 COMMUNITY TRAINING APPROACH

The individual communities of the Yukon Territory provided the broad basis for the approach to training. Each of the individual communities of the Territory is unique in terms of its own geographic setting within the Territory as well as the social-economic factors which exist in each of the communities. Because of the uniqueness of each of the communities the approach to housing is different, hence the approach to training the specific retrofit renovation project undertaken in each of the communities was unique and special to that community. The uniqueness of the community approaches provided for a wide variety of training experiences for the ten trainees.

The development of the individual projects was undertaken following a specific developmental pattern. This pattern was outlined as follows; the initial liaison made by the trainee, advisor, and director of the Friendship Centre. Once initial contact was made with the program the individual trainee accommpanied by an Instructor/Advisor spent time undertaking an assessment of the housing stock in each of the communities. It was through the housing stock assessment that the designation of units would then be accomplished. This designation of units was done through a joint process by the trainee, the Instructor/Advisor and the Band Council. This process of designation of housing units for once interjected a rationale to the rural community approach to designation of house construction. Much of the previous house construction designation was done on the basis of who knew whom or who was related to whom within the community context.

The uniqueness of the individual communities, justifying the uniqueness of the approach to training cannot be emphasized enough in the context of this report. It was the individual communities, their nature, their people, the trainees that originated from that community that provided the impetus for the success of the training program. The following will highlight specific communities and unique aspects of each of those communities.

4.1 TESLIN

Teslin was the first community undertaken by the retrofit renovation project. By nature of being first Teslin suffered a number of problems. These areas of problems were the ironing out the initial kinks in the development of a smooth operating project. Thus the development of a situation where the trainee from Teslin was forced to be extremely innovative in developing methods of approach, problem solving, and supervision of the training project. The community of Teslin provided for a excellant mix of housing stock and approach to housing problems. A major exterior retrofit wrap was undertaken in the community of Teslin along with four medium level retrofit wraps and approximately twelve low level retrofits.

The community of Teslin was unique in the context of housing that was provided previously by the Department of Indian and Northern Affairs. The department had spent a lot of money and time in terms of housing improvement within the community of Teslin. Some of the housing units had renovation dollars poured into them time and time again. Thus the perceptions of renovation at the Band level were considered to be nominal or ineffective at best by both the Band Council as well as the members of the Band community. The specific work that was accomplished in

Teslin, a major high level retrofit, medium level retrofits and a large number of low level retrofits changed the perception by the Band Council and the members of the community. This is further witnessed by the pilot project that Teslin developed at the end of the renovation program. This pilot project was the first community based energy efficient program developed and implemented by a Band Council and the community energy trainee.

4.2 CARCOSS

The community of Carcross is a very picturesque small community of some 250 inhabitants nestled amongst the mountains along Lake Bennet. Because of the physical setting of the community of Carcross and its historical perspective, construction and renovation work in Carcross has always been cognizant of the historical nature and authenticity required in both renovation and new construction projects.

Although the retrofit renovation project only accomplished two weeks work in the community of Carcross, the work that was done in Carcross was low level retrofit work specifically on Elders' housing. The emphasis and importance placed by both the Band Council and the trainee from Carcross on providing services through this specific program to the Elders within the community was very important. It emphasizes not only the cultural importance of the Elders within the community but also the importance of creating a comfortable living environment for Elders. Technically the work that was done in Carcross was maintaining the traditional authenticity of the housing units while increasing the energy efficiency of the dwelling units.

The inability of the Band Council to make a firm decision regarding a major retrofit project in Carcross, was a serious deterrent to the community of Carcross,not only in terms of a physical renovation project that did not occur but the lack of energy information transferred to the community of Carcross.

4.3 MAYO

In contrast to the community situation in Carcross, the Mayo community welcomed the retrofit renovation project literally with open arms. The Project Manager from Mayo was given Carte Blanche by the Band and Band Administrator to undertake three major retrofit projects. The Chief and specifically the Band Administrator had been very interested and involved in negotiations with the development of the retrofit renovation project. Subsequently the Band had allocated substantial dollars for three major projects within the context of the community of Mayo. The community of Mayo provided the renovation training crew with their first experience in building on perma-frost. Mayo holds the destinction of being both the hottest and coldest spot in the Yukon Territory. Because of its geographic location as well as the topographic setting of the community of Mayo, perma-frost is a serious problem. The project manager, in conjunction with the Instructor/Advisors had two housing units that were situated on areas of perma-frost.

As well as the difficulties of building on perma-frost the project undertook one exterior retrofit wrap and one interior retrofit wrap, thus being able to gauge the inherant benefits in both approaches.

The Band Council provided the project with the use of a group home on the outside of Mayo for the establishment of the camp. This provided a much more comfortable living situation than the previous usage of trailers in both Teslin and Carcross.

4.4 OLD CROW

Old Crow was the most isolated northern community visited by the retrofit renovation project. Old Crow is situated geographically at the northern most point of the Yukon Territory. Because of its very unique isolated nature Old Crow required very extensive project management and planning for the project to materialize and be completed successfully. The logistics of flying in a thirteen man crew into a isolated remote community, complete with necessary provisions and supplies created serious problems. These problems were all overcome in terms of the project management innovation provided by the trainee from the community of Old Crow.

The building techniques employed in the community of Old Crow were unique in nature to extreme northern construction. The necessary preservation of the perma-frost, the cost of construction related to air lifting supplies into the community, and the isolation and difficulty of bringing in sub-trades. The interior retrofit of new log construction was again a new aspect undertaken by the retrofit renovation project.

4.5 WATSON LAKE

The community of Watson Lake in direct contrast to Old Crow is the southern most community in the Territory. The

community is also divided into three distinct areas; Watson Lake, Upper Liard and Two Mile. These three distinct communities within the context of the community of Watson Lake provided for a unique experience in co-ordination for the project manager. This co-ordination was not only evident in the physical setting of undertaking work in three distinct communities, but also in terms of the social setting of the Band Administration and its approach the communities.

The contrast between Old Crow and Watson Lake was further exemplified by the availability of material. In Old Crow there was virtually no material available locally should some item be short listed. In the community of Watson Lake there was very good local retail distribution of building supplies. Watson Lake was the first community were the project undertook a large scale light commercial retrofit. The community Band hall was the subject of an interior retrofit wrap in the community of Watson Lake.

4.6 PELLY CROSSING

Pelly Crossing is situated mid-point on the Klondike Highway between Whitehorse and Dawson City. Pelly Crossing is historically one of the oldest Native settlements in the Territory. Because of its historic setting and nature, the housing units in the community of Pelly Crossing are predominately log construction. The community of Pelly Crossing is still predominately reliant upon a traditional life style i.e. hunting, fishing and trapping. The Project Management trainee, in consultation with the Instructor/Advisor and the Band Council designated three new units that had been purchased by the Pelly Band from the Yukon Housing Corporation. Because of a lack of

expertise within the community in conventional house construction as opposed to traditional log construction it was felt that the retrofit renovation project could assist both in terms of the physical renovation to these three units as well as a information transfer to the community for further work in this area. The retrofit renovation project undertook three partial exterior wraps on three double wide trailer units in Pelly Crossing. The project in Pelly Crossing was also undertaken in the most adverse climatic conditions of any of the projects. The time frame for the Pelly Crossing project was mid November to mid December. Thus we had situations of extremely cold temperatures creating very difficult construction while utilizing energy efficient building techniqes.

4.7 CARMACKS

The Project Management trainee for the community of Carmacks began a liaison process with the community of Carmacks prior to the project's commencement in January. Unfortunately due to a change in the Band and Council as well as the Band Administrator for the community of Carmacks the retrofit renovation project designated for the community of Carmacks did not materialize. As a result of intervention by the project management trainee, the Instructor/Advisor and the Executive Director of the Friendship Centre, the project undertook to establish two alternate programs during the time slot for the community of Carmacks. These two alternate projects were low level retrofit work within the community of Whitehorse i.e. specifically the Kwanlin Dun Indian Band and a pilot project in the community of Teslin. The low level retrofit work accomplished in the community of Whitehorse utilized the same project management trainee and training program that had been developed for the community of Carmacks.

The pilot project in the community of Teslin was done through consultation, but on the initiative of the Teslin Indian Band and the Project Management trainee from the community of Teslin. The project was an interior retrofit of the long house in Teslin. This pilot project marked the first community initiative in energy efficient projects at the Band level.

4.9 BURWASH

Burwash is located along the Alaska Highway some hundred and thirty five miles from the Alaska border. The community of Burwash is nestled amidst the mountains of the Kluane National Park. The community of Burwash has a sister community of Beaver Creek. Because of the small size of the Native population in the community of Beaver Creek it was included in the project for Burwash. The Project Management of the Burwash/Beaver Creek project was split by both the trainee from the community of Burwash and the trainee from the community of Beaver Creek. The physical establishment of a camp and the majority of work was done in the community of Burwash. It was in the community of Burwash that the crew received the most exposure to retrofit work done on traditional log housing design. The shift to the community of Beaver Creek was done on a short interm nature to accomplish the small number of low level retrofits that were designated for the community of Beaver Creek.

4.10 WHITEHORSE

The original project for the community of Whitehorse did not materialize. The original project which was the energy efficient work on a large pre-fab production housing plant in the Kwanlin Dun Village was not able to begin due to

lateness of the delivery of the components for the pre-fab plant. Because the project could not proceed in its original intent the project was divided into two subsequent areas:

1) the low level retrofit of a number of units in the Kwanlin Dun Indian Village that would improve the quality of the housing prior to their replacement in the relocation project.
2) a high level exterior retrofit wrap of the Yukon Conservation Society building in downtown Whitehorse.

The exterior retrofit wrap of the Yukon Conservation Society provided an opportunity for the retrofit crew to work directly in a community where adherence to building bylaws and codes was necessary. The majority of the rural communities are not subject to strict adherence to building code.

It also provided an opportunity for a exposure to a much larger community base i.e. the community of Whitehorse, which is the largest community in the Territory.

Each of the communities where the retrofit renovation project undertook work had very distinct and unique characteristics to its make-up, thus requiring a new and unique approach to not only the retrofit renovation project but also the training approach employed. It cannot be stressed enough that the success of the training program was to a large extent based upon the uniqueness of each of the communities and the necessity to alternate, innovate and revamp training programs and its delivery for each of the communities. Extensive community project reports are included in the appendixes.

5.0 COMMUNITY BENEFIT

The benefit to the rural communities throughout the Territory can be gauged in terms of the desire of those communities to begin retrofit renovation projects on their own. This was first evidenced by the community of Teslin. Teslin after having been exposed to the retrofit renovation project in May began to develop, utilizing the Project Management trainee from the community of Teslin, a retrofit renovation project of its own. It cannot be stressed enough that the significance of a community undertaking a energy efficient retrofit project on their own initiative was a substantial break through.

The Project Management trainee spent times on the weekends working in conjunction with the Chief and Band Administrator putting together the proposal for funding as well as the operating frame work for the successful completion of the project. This initiative and interest was generated by the training program and the effect that it had upon the community. This effect was two fold in nature:

1) the Band Administration
2) the populace of the community itself

The credibility of retrofit renovation is extremely high in the community perception. This transfer of energy information to the communities will continue as long as the Project Management trainee in each of the communities continues to work closely with his own community in the development of project at the community level. The training and information transfer can then begin at a community level on an extended basis.

6.0 TRAINEE BENEFIT

The individual trainees have benefited from two years of energy efficient training. This training has been two fold in nature:

1) actual transfer of information on energy efficient construction techniques
2) project management training

The individual trainees are the most qualified energy construction experts in the Territory today. This is not an overstatement of their abilities and qualifications. Not only have the trainees received the technical information and transfer of information but have had extensive hands on training on the job. Thus the reality of concepts such as one-third/two-third insulation requirements regarding vapour barrier are not only technical information that the trainee possess but is ingrained in the trainees in terms of countless numbers of projects emphasizing that physical aspect of job application.

Each of the individual trainees must decide whether they will return to their respective communities and continue the training at a community level i.e. transfering that information to other people within the context of the commmunity and assisting the Band Councils in further projects at the community level, or to pursue employment on their own. The obvious benefit would be for each of the trainees to return to their respective communities. This however, is not a decision that the Instructor/Advisors, the Administration of the project can make. These are individual decisions that the trainees must make for themselves. The trainees are equipped to either undertake that work at a community level or to be gainfully employed in the private sector.

7.0 POST TRAINING BENEFITS

The retrofit renovation project known as Skookies II has had benefits that fo far beyond the Territory and rural communities where the program was administered. The project has received national exposure, interest expressed by other Friendship Centres, Indian Bands and private corporations. The applicability of the approach to training has been reviewed by other training institutions. The approach to training has received International exposure.

7.1 INDIVIDUAL TRAINEES

Each of the individual trainees will have the opportunity to write the retrofit certification examination upon completion of the retrofit training program. Upon the successful writing of that examination the individual trainees will have the certification to undertake any government sponsored energy efficient programs within the Territory.

7.2 COMMUNITIES

Through exposure to the retrofit renovation training program the individual communities now have an understanding of energy efficient construction and its advantages. The individual communities can now pursue energy efficient construction projects on their own initiative. Areas of funding for various energy programs exist within the context of the Territorial as well as the Federal Government. It is now the inpetus of the community to continue the training and information transfer to their own workers within the communities.

8.0 BUDGET REVIEW

BUDGET - SKOOKIES II

	MONTHLY	TOTAL COSTS
Wages:		
Trainees	$14,800.00	$148,000.00
Cook	1,800.00	18,000.00
Trainers	8,000.00	80,000.00
Travel	1,290.00	12,900.00
Rental (Living Accom.)	2,000.00	20,000.00
Groceries	1,500.00	15,000.00
Vehicle	640.00	6,400.00
Interest	466.00	4,660.00
Camp Establishment Fee	544.00	5,440.00
Utilities	416.00	4,160.00
TOTALS	$31,456.00	$314,560.00

FUNDING SOURCES

C.R.E.D.A.	$ 85,000.00
G.I.T.	112,000.00
Indian Affairs	50,800.00
Yukon Territorial Government	24,200.00
Private Foundations	42,560.00
TOTAL	$314,560.00

9.0 ECONOMIC IMPLICATIONS

The economic implications of the spring-off projects as they develop in the community are of substantial benefit to each of the individual rural communities. The project, by exposing the rural communities to new construction techniques i.e. energy efficient construction technology, has stimulated renewed interest in the improvement of the housing stock within the communities. This improvement of housing stock has been coupled with the desire by the rural communities to extend the retrofit renovation energy efficient construction technology to their own band members and trades people. The renewed interest in promotion of training and improving the comfort and liveability of housing units can be seen by the many projects undertaken since the retrofit renovation projects in each of the communities.

The benefit accured to each of the individual communities has been in the overall perception of the increase in energy savings on a per unit basis. The project has consistently achieved the following percentage levels of increase in energy savings in the retrofits undertaken:

High level retrofit	35% to 65%
Medium level retrofit	25% to 40%
Low level retrofit	15% to 35%

The variances in the level of energy saving produced is based upon the state of the housing unit i.e. the energy audit or analysis performed on a unit prior to undertaking the specific designated retrofit. These levels of improved energy efficiency, combined with a renewed interest by trades people as well as band members to pursue the

information transfer at the community level has increased the level of economic activity i.e. retrofit renovation at the band level.

The community of Teslin has undertaken a number of specific energy efficient retrofit renovation projects. It is important to realize that Teslin as a community has undertaken the greatest extend of retrofit renovation projects since the Skookies II Retrofit Renovation Project has been in the community. Teslin is unique in terms of the Chief and Council as well as the compentency of the Band Administration, and it should not be deemed as the norm for the extent of applicability throughout the Territory. However, Teslin does serve as an unique example of the ability of any community to undertake, and benefit from the energy information transfer dependent upon the impetus provided for the community.

In January the Teslin Indian Band successfully negotiated with the Department of Indian Affairs for additional renovation dollars at the Band level. These additional renovation dollars were used to complete an interior retrofit wrap on the Long House, an exterior retrofit of the Alcohol and Drug counselling office, and an exterior wrap on the Wash House. These three specific projects provided an excellant opportunity within the community to begin training local band members and trades people in energy efficient construction techniques. The direct economic spin off to the band in terms of the three specific projects was an additional $72,000.00 in retrofit renovation dollars coming into the Teslin Indian Band. These dollars were utilized both in terms of materials as well as additional wage dollars for band members.

For the '85/'86 fiscal year the Teslin Indian Band is looking at fourteen exterior high level retrofit wraps for the community. The designation of units to be wrapped was based upon the housing assessment completed by the Project Management trainee, Mr. Raymond Douville at the beginning of the Teslin project in May of 1984. The fourteen wraps to be undertaken by the Teslin Indian Band in the fiscal year '85/'86 are costed at an average of $14,000.00 dollars per wrap for a total of $168,000.00 dollars in retrofit renovation projects.

The emergence of retrofit renovation construction as an alternative, as well as an incentive to the local Band for improvement of housing stock and the transfer of information and training to Band members has proved for the Teslin Band to be of great economic as well as social benefit. The Teslin Indian Band provides an example of the benefit that can be realized at the Band level.

10.0 SUMMARY

The success of the training program both in terms of the perception as outlined, is evident in two major areas. These areas are as follows:

1) the success of future projects in the rural communities.
2) the ten trainees who completed the two year training program are the same ten trainees who began the project in June 1983.

The commitment of the individual trainees to the program its delivery of training information, as well as programs at the rural area atest for the success of the training program more than any other specific aspect.

Success is measured by the ability of individuals to successfully complete and remain within a given program. To this extent the Skookies II Retrofit Renovation Training Program has achieved the highest degree of success.

11.0 APPENDICES

GENERAL INDUSTRIAL TRAINING PROGRAM

OLD CROW COMMUNITY REPORT

The community of Old Crow provides a unique opportunity within the context of the Yukon Territory for building programs of any form, let alone a retrofit renovation training program. The uniqueness of the community, the isolation and the inaccessibility of the community create a series of logistical as well as tactical problems in the delivery of the retrofit renovation training program.

Consultation was undertaken very early in the program with the Old Crow Chief Johnny Able, the Band and the Band Administrator. This was in ensure that both the concept and understanding of the retrofit renovation training program existed within the community, as well as the involvement by the Band. Substantial lead time is required because of the difficulties in transporting material and supplies into the community of Old Crow.

Initial contact was made with the Band in June and a process of explanation and understanding was developed with the Old Crow Band. The Friendship Centre utilized the services of Mr. Robert Mason, a local architect, who has worked extensively with the Old Crow Band in terms of furthering the understanding and awareness by the Band of the particular project. Mr. Mason, the trainers, Micheal Frost the trainee from Old Crow, the Chief Johnny Able and the individual home owners in the designated units in Old Crow were all involved in a joint process of determining the design, the energy-efficient technology to be utilized and the building schedule, for the two units to be constructed in Old Crown.

Through the process of assessment it was determined that the Old Crow project would be the construction of two new units. The determination to go with new units was based in part on the assessment that the majority of housing stock in the community of Old Crow would be replaced in the future by new construction as opposed to renovation of existing units. To quote from a telex send to Johnny Able by Mr. Robert Mason "the crew will learn how to properly build on perma-frost". The main focus of the project in Old Crow was three fold:

1. The construction of new traditional log units.
2. The interior retrofit of those log units.
3. The preservation of the perma-frost under the units.

It is important to deal with each area individually and in more depth.

1. TRADITIONAL LOG DESIGN:

The traditional log design was chosen to blend in with the existing housing stock within the community. The traditional log has been utilized in the community of Old Crow for hundreds of years. It is a realistic design for the inhabitants of the community and meets a number of specific requirements i.e. availability of local material, and the availability of surplus materials within the community. The logs were cut and floated down the river to the community of Old Crow about a month prior to the actual commencement of construction.

2. INTERIOR RETROFIT:

The approach of doing an interior retrofit on a new log construction was chosen in order to preserve the log exterior of the buildings, as per discussion above and secondarily to upgrade the insulation and heat retention qualities of a log house. Two different and unique designs were utilized on each of the housing units. In one of

the designs the floor system was constructed utilizing a pre-fabbed manufactured floor truss out of local material. The second design was conventional frame flooring utilizing three by twelves' for the sub-floor unit. Interior two by four walls were utilized to increase the cavity space for insulation as well as the installation of an integral vapour barrier throughout the unit. Again in the units there were two basic design approaches to the interior two by four partitioning, one being the two by four wall against the log structure with a marginal space to stop thermal bridging, the other approach providing a more substantial cavity for increased insulation space between the two by four wall and the exterior log wall. During the construction of the units various techniques of utilizing salvage material within the community were implemented both in terms of improvising when the necessary materials had been short listed on orders or ultimately assist in reducing the costs of the building units in Old Crow. Both of the units utilized a conventional truss roof system that was manufactured on site. The conventional truss roof system allowed for the instalation of an R-60 factor in the units.

3. PERMA-FROST:

Possibly in no other location in the Yukon would the trainees encounter the degree of perma-frost which exists in Old Crow. It is fundamentally crucial to any building that the perma-frost remain integral underneath the units. This necessitated the building of three foot gravel pads upon the ground which provide a thermal barrier for the perma-frost. Upon the three foot gravel pads the foundations were laid and the floor joisting installed. Upon the installation of the floor joist, particular detail was paid to the insulation of the floor joist system, the securing of that insulation and the integrity of

the vapour barrier which was placed between the sub-floor and the over-lay flooring. By ensuring the integrity of the vapour barrier, and hence the effectiveness of the insulation the heat loss through the floor joist is reduced to a nominal degree, thus ensuring the preservation and integrity of the perma-frost.

With the arrival of the crew the work began on the two units and progressed to roof-on stage upon the return of the crew from the community of Old Crow. Attached are the activity reports from the trainers and the trainees for the Old Crow project.

SUPPLEMENTAL OLD CROW PROJECT REPORT

In the community of Old Crow the Project Management position was assumed by Micheal Frost the designated trainee from Old Crow, the Job Foreman position was assumed by Joseph Buyck the previous Project Management trainee, the Project Foreman position was assumed by the previous Camp Manager trainee Raymond Douville and the Camp Manager trainee position was assumed by the previous Job Foreman Raymond Matthews. The following narrative will briefly describe the roles and job functions of each of the trainees on the Old Crow project.

PROJECT MANAGEMENT TRAINEE:

As was indicated in the previous report the Project Management trainee began the process of liaisoning with the Band Council as well as the Architect on the Old Crow project early in June. A series of meetings where held independantly with the Architect as well as the Band Council in terms of ensuring an understanding by the Band Council and the community of work to be undertaken on the project. On July 16, Micheal Frost flew up to Old Crow and began the process of site preparation for the arrival of the Retrofit crew. The material takeoffs and ordering of material had been done in a previous meeting in June in conjunction with the Architect on the project Mr. Robb Mason as well as advise from the Instructors. The ordering of material for the Old Crow project was done substantially in advance to ensure that the necessary material would be on site due to the logistics of having material flown in. The job of material takeoffs and estimates was extremely crucial for the Old Crow project. It is extremely important to ensure that material takeoffs are very accurate thus ensuring that the cost of both the material to be used as well as the cost of bringing materials in is minimized and kept within budget.

Upon arrival in Old Crow, Micheal began the process of preparing the gravel beds to preserve the integrity of the perma-frost. Upon completion of the gravel beds, Micheal hired a number of local carpenters helpers to assist in the initial pre-fabrication of floor trusses for the arrival of the crew.

Once the crew was in place in Old Crow work began on completing the fabrication of the floor trusses for the Donald Frost unit as well as the securing of material for the Steven Frost house. Micheal's responsibility was specifically in terms of work scheduling, ensuring that material was on site, and co-ordination with sub-trades. The co-ordination of sub-trades proved to be a particularly difficult task with respect to the Old Crow project. This was difficult due to co-ordinating the arrival of the necessary sub-contractors from Whitehorse. A number of difficulties that were unique with respect to the performance of the Project Management position in the community of Old Crow were three fold in nature:

1) the liaison with Householders
2) the arranging for supervision of the removal of garbage, delivery of water and sewage
3) crew morale

Within the context of a very small, extremely isolated community ensuring that the houses were being built to the satisfaction of the Householder is a very unique and trying situation. Micheals' approach to dealing with the constant supervision by Householders was in terms of establishing regular meetings and inspections of the progress when the crew was not on site. Because of the limited resources that exist in the community such as Old Crow the arrival of an additional twelve or fourteen people within the community created very specific

demands on water delivery, sewage disposal and garbage disposal. This aspect of the project was difficult to ensure a continuous and smooth operation. The final item of crew morale is again a very difficult one to deal with in a community such as Old Crow, where the possibility of getting away for even very short limited periods of time is not a reality. In an attempt to deal with this specific problem, periodic expeditions into the countryside on off hours were established. Overall, Micheals' ability to improvise and deal with situations as they arose, allowed for the project, although a difficult one, to be successfully completed.

JOB FOREMAN:

Joseph Buyck was the Job Foreman during the Old Crow project. Joseph was specifically in charge of a four man crew that worked on the Donald Frost house. Josephs' responsibility was to designate work to each of the crew members, to ensure that the work was being done with respect to the schedules that had been provided and in ensuring that if material was needed that the Project Manager had been notified to ensure that the material was indeed on site for the next day's work. The difficulty of the Job Foremans' position with respect to the Old Crow project was again one of the isolation and uniqueness of the Old Crow situation i.e. lack of material and having to improvise in terms of utilizing local material that could be salvaged or was available within the community for use.

PROJECT FOREMAN:

The position of Project Foreman was handled by Raymond Douville. Raymonds' responsibility was not only for the other crew but also in terms of assisting Joseph in work scheduling or supervision of the overall project. During the course of the project Raymond advised Micheal on overall quality of the workmanship being adhered to as well as assisting in ensuring that a good flow of information was going to the Project Manager to ensure materials as well as work scheduling.

CAMP MANAGER:

This position was assumed by Raymond Matthews. The job of Camp Manager was especially difficult in Old Crow. To ensure a continuous supply of water, Raymond found it necessary to contract with a local resident in Old Crow to provide daily water delivery to the camp site. This situation was equally as difficult with respect to garbage disposal, since there is difficulty in disposing of the garbage on a regular basis in order to maintain the necessary safety and cleanliness of the camp. The other major difficulty with respect to Raymonds' job in Old Crow was the ordering and delivery of necessary groceries. Consultation had been arranged with the store in Old Crow indicating the arrival of additional personal, however the difficulty of ensuring the arrival of the necessary orders made it necessary for the Camp Manager to arrange for alternate sources of meat at times during the project.

LOG CONSTRUCTION:

The project in Old Crow provided a unique opportunity in a number of areas, the other major area being in terms of introducing the crew to log construction. To this point on the project the trainees had not had any experience with log construction. Prior to the arrival of the crew, during the liaison period in June the necessary logs for the construction were contracted for cutting. The logs were cut and floated down the river to Old Crow. Upon there arrival in Old Crow the logs were peeled and one set of logs was milled to two sides the second set of logs were scribed upon placement. This process provided for an opportunity for the crew to experience two primary methods of log construciton. The two sided logs were butt and pass on the corner joints, the round logs were scribe butted.

The log construction was only taken up to standard wall height, and a conventional truss roof design placed on top of the logs.

WATSON LAKE PROJECT REPORT

PROJECT OVERVIEW:

The Retrofit project undertook three specific jobs in the community of Watson Lake. These three jobs were as follows:

1) an interior wrap on the Liard Band Community Hall
2) the exterior wrap of the Pump House
3) a medium level wrap on a senior citizens residental unit

COMMUNITY HALL:

In consultation with the Upper Liard Band an interior wrap of the community hall was undertaken. Due to the assessment completed on the building the decision to do an interior wrap was undertaken. This decision was based on the exterior clad of the building as well as the roof of the building being in good condition. Allowing for the factors of the exterior of the building being in good condition, the decision to upgrade the insulation factor in the building to make the unit economical for the Band to continue to operate, was undertaken. New walls were fabricated and erected inside the building providing for a six inch cavity between the existing wall and the new wall being installed. This allowed for the increase of the insulation factor by an R32 in the wall cavity. Once the walls were erected and the insulation placed the electrical outlets were re-installed in the new walls as well as a decorative paneling of 3/8" material placed on the interior walls. The rationale for the 3/8" paneling was in ensure that interior vandalisim of the hall would not continue to happen.

Proceeding with an interior wrap created some difficulties in terms of the ceiling of the unit. A new vapour barrier was placed over the existing ceiling, the vapour barrier was then

protected with 1/2" gyproc. The crew then proceeded to do extensive work in the attic of the unit around all penetrations through the vapour barrier. Special detail was emphasized with respect to washroom areas and kitchen areas were plumbing pipes penetrated the vapour barrier. The ceiling area was then re-insulated to produce an effective R40 in the ceiling.

The doors and windows on the Band hall required special attention. The existing windows in the structure were a single glazed unit. In order to upgrade the windows the crew installed a second pane of glass, glazing that unit in place, thus producing an effective double thermal glazed window. The exterior doors on the unit were salvageable, thus the doors were re-sheeted to produce a more visually pleasing unit. The doors were then weather-stripped to ensure against air leakage.

The front steps of the Band Hall were in a state of disrepair, these were discarded and new steps up to the unit were built and installed.

The unit sits on a heated crawl space. To ensure the integrity of the wrap the crew insulated the exterior walls of the crawl space with two inch poly-styrene, and re-installed the heat ducts into the heated crawl space. This effectively produced an integral interior wrap.

Additional work was done on the interior of the Band Hall with respect to the furnace room of the unit. The walls of the furnace room were clad with 5/8" fire-guard gyproc and a fire-door installed between the furnace room and the building proper.

To complete the work on the Community Hall gable vents were installed in the attic to ensure an adequate air movement through the attic.

PUMP HOUSE:

The well adjacent to the Community Hall provides water supply for the Community Hall, the two four-plex senior citizen complexes and two senior citizens units. The Band had experienced for years an ongoing problem of the well in the pump house freezing up during the winter time thus disrupting the supply of water, as well as the costly repairs for the pump. The existing pump house was a small structure measuring four feet by four feet. The exterior walls of the pump house were punched out to create a slightly larger pump house, one measuring six feet by six feet. This facilitated easier access to the well and any necessary maintenance repairs to be performed. A complete exterior wrap was undertaken on the pump house as well as insulating the floor of the pump house. The well pump was replaced and the lines cleaned out and insulated to ensure against future freezing.

The work completed on the pump house ensures that there will no longer be continuous disruptions of service due to the well freezing up.

RESIDENTAL UNIT:

The medium level wrap undertaken.on the senior citizen unit was in terms of replacing doors in the unit, sealing the windows to ensure against air leakage and a complete investigation of the unit in terms of air leakage. This investigation entailed removal and securing of air leakage around electrical outlets in the exterior walls, caulking and sealing of electrical wires in the attic where penetrations are made through the top plate, sealing and caulking vapour barrier penetrations due to plumbing stacks and sealing and caulking the baseboards of the unit.

A new tin roof was installed directly over top of the existing roof on the unit, in order to ensure the stoppage of major leaks in the roof.

The medium level wrap Retrofit work undertaken on the senior citizens unit produced an immediate effect on the heating requirement of the unit. This was attested to by the homeowner in the unit actually requesting of the Project Manager to not do any further work on the unit, because "the unit was becoming too hot".

UNIQUENESS OF TRAINING AREAS:

The Watson Lake project provided a number of unique areas not previously experienced by the Retrofit crew. These areas include the following:

1) the largest building undertaken in terms of an exterior Retrofit wrap to date;
2) the first oil heated building as opposed to wood heating buildings;
3) unique techniques developed in terms of an interior Retrofit wrap;
4) the smallest Retrofit undertaken i.e. pump house;
5) the dispursed nature of the community i.e. Watson Lake, Two and a half mile and Upper Liard;
6) material availability.

THE LARGEST INTERIOR RETROFIT WRAP:

The interior wrap performed on the Community Hall in Liard is the largest interior Retrofit undertaken by the crew to this date. It may well be the largest interior wrap undertaken in the Territory, although I am not completey certain as to the validity of that statement. The size of the unit is sixty feet by thirty-five feet. In the assessment of units to be worked upon in the community, the Band was extremely anxious in attempting to have something done to the Band hall. The cost of maintaining the Band hall, in terms of continuous vadalisim as well as heating costs were making the utilization of the building almost prohibitive. The solutions undertaken to deal with both of those situations have pleased the Band, as well as indicated a unique approach to dealing with the problem situation.

OIL HEATED BUILDING:

This was the first unit that the crew encountered that was oil heated as opposed to wood heated. The cost of heating the unit emphasized to the crew the importance of ensuring that the design undertaken for the unit, as well as the workmanship was of superior quality. If this had not been the case the effectiveness of the wrap would have been immediately noticeable. It was also the first opportunity for the Instructors to go through with the crew the servicing and repair of oil fired furnaces.

THE SMALLEST WRAP:

The exterior wrap on the pump house in Upper Liard was a unique undertaking. Many communities encounter similar problems with water supply during the winter time. The wrap of the pump house demonstrated, at nominal cost, the effectiveness of wrapping a unit to ensure that the well was maintained in a serviceable fashion.

UNIQUE TECHNIQUES:

A substantial cost of interior wraps is directly related to the cost of sub-trades i.e. electrical sub-trades to move all of the electrical wiring located in the exterior walls. Upon consultation with the code book the Instructor and the crew decided that there was no restrictions against simiply moving the electrical outlets higher off the floor. This allowed for the raising of the electrical outlets by six inches from their previous location and then re-installed in the new frame wall, without utilizing electrical sub-trade. Extensive work was done in the attic of the unit. This again was new and unique work the crew undertook. This involved extensive caulking and sealing around plumbing stacks and electrical wires penetrating the vapour barrier.

A SPLIT COMMUNITY:

Watson Lake is a community that is unique in its make-up. The community and the Band is located within a ten mile radius around Watson Lake beginning with Watson Lake where the camp was established, Upper Liard where the Band Hall was located, and the pump house, as well as the senior citizens residence and the community of Two Mile where the residental unit was located. This created a situation whereby the logistics of transporting crews and material was split over three distinct locations.

AVAILABILITY OF MATERIAL:

In direct contrast to communities undertaken to date, the local supply of building materials was extremely good in Watson Lake. There exists in Watson Lake two very good building supply centres. This provided a situation whereby access to material could be obtained easily.

TRAINEE SKILL DEVELOPMENT:

In the community of Watson Lake the Project Management trainee was Charile Morris, the Job Foreman was Micheal Frost, the Project Foreman was Raymond Matthews and the Camp Trainee was Joseph Buyck.

PROJECT MANAGEMENT TRAINEE:

Charlie Morris went to the community of Watson Lake fourteen days prior to the commencement of the project in Watson Lake. During this time Charlie met on three separate occasions with the Chief and Council to explain the Retrofit Renovation program, to assess the housing stock in conjunction with the local Band in Watson Lake and to undertake the designation of the housing units. During two of those sessions in Watson Lake the Instructors were present to assist Charlie in discussions and negotiations with the Band. Special consideration and emphasis was placed

on the process of negotiation and understanding of the program with the Upper Liard Indian Band, because of a previous situation that had existed. A year ago a crew from outside had come through the community specifically claiming to be energy efficient construction experts. The Band contracted with this crew to do some energy efficient upgrading work on a number of senior citizens residences in Upper Liard as well as the Chiefs' house. Unfortunately the caliber of work, the quality of workmanship and the results of the work were not very good. This caused a lot of friction and hostility within the Band community. Thus it was a part of Charlie Morris' job to convince the Chief and Band of the credibility and reliability of the crews workmanship.

This was accomplished, successfully by the Project Management trainee. The Band very quickly moved to designating the specific units to be worked upon. Charlie then in consultation with the Instructor/Advisors undertook a design plan for the Community Hall, the pump house as well as the residential units. Upon approval of the designs, material takeoffs were completed, estimates on the cost were provided to the Band, and material was ordered.

Much of Charlies' time was consumed in terms of ensuring that necessary material was on site, the providing of logistical transportation in terms of moving men from one job site to the other as well as providing transportation at meal times and to and from work. This created a situation where a lot of demand was placed on the Project Management trainees time during the project in Watson Lake.

The other important factor that Charlie dealt with, was the scheduling of work crews. This was done in conjunction with the Job Foreman and the Project Foreman to ensure that no one individual on any crew was stuck working in an isolated situation. i.e. Two and a half mile for extended periods of time.

There was also a situation of supervision in the first day of the project in Watson Lake that required a recommendation from the Project Management trainee to the Instructor/Advisors that one of the trainees be suspended for a one week period of time. This recommendation was passed on the the Executive Director of the Friendship Centre and appropriate action taken.

The final area of note with respect to the Project Management trainees' area of responsibility and duties was ensuring that the Camp Manager was staying on top of his job. This was crucial because of the logistics of bringing crews back and forth to the senior citizens complex where the meals were being prepared, and then transporting them back to Watson Lake where the sleeping accommodations were.

The project in Watson Lake was successfully completed on schedule.

JOB FOREMAN:

Micheal Frost was the Job Foreman on the Watson Lake project. Micheal was specifically responsible for the pump house project and the residential units completed. Micheals' responsibility was to liaise with the Project Management trainee to ensure that the material necessary for both of these projects would be on hand daily, as well as recommending to the Project Management trainee rotational orders for movement of crews. It was important in terms of the rotation to ensure that individual members of the crew were not isolated for periods of time longer than five days in any one of these projects. Micheal was responsible for the daily reviews of the work in progress and completed with respect to the adherence to work schedule as well as the maintenance of the tools and equipment to ensure that nothing was lost or stolen. One of the other areas of responsibility

on the specific project for the Job Foreman was to ensure the security of building materials. This was particularly important due to the diverse nature of these three projects, i.e. one in Two and a half mile and in Upper Liard.

PROJECT FOREMAN:

The position of Project Foreman was handled by Raymond Matthews on the Watson Lake project. Raymond's overall responsibility was to ensure that all three projects were proceeding on schedule and would be completed by the end of the project. This required specifically liaising with both the Project Management trainee as well as the Job Foreman on the different sites as well as an assessment of the work being performed by his own crew to be able to realistically advise the Project Management trainee. Raymond was specifically responsible for the Community Band Hall project as well. This division of labour was specifically designed to facilitate the large project being accomplished on schedule. The Project Foremans' responsibilities also include the maintenance and operation of all vehicles on site. This proved to create specific problems in Watson Lake since there were two attempts to steal the Friendship Centres' van and three incidents of gas being syphoned from the vehicles. This necessitated the establishment of a security system and maintenance of said system.

CAMP MANAGEMENT TRAINEE:

This position was assumed by Joseph Buyck. The logistics of having the accommodations in the Lake View Appartments in Watson Lake, projects in Two and a half Mile, and the cooking facility in Upper Liard necessitated a rigorous schedule of transportation to and from various locations. Joseph established a system of the centres' van picking up the trainees early in the morning in Watson Lake and delivering them to the cooking facility in Upper Liard and then transporting the trainees back to the work sites.

In order to cut down on the amount of transportation, the cook prepared bag lunches for the employees so that lunches could be eaten on site as opposed to returning to the cooking facility.

Food stuff and supplies was readily available in the community of Watson Lake from two local distributors. This then necessitated simiply co-ordinating with the cook to ensure that food orders were in on time to be picked up.

The final difficulty encountered by Joseph was the fact that since the pump house was being rebuilt and the pump repaired, water delivery had to be set up in order to have water at the cooking facility.

PELLY CROSSING PROJECT REPORT

PROJECT OVERVIEW:

The Retro-fit project in Pelly Crossing undertook two specific areas of work. These two areas were as follows:

1) partial retro-fits on three rental/purchase units.
2) the low level retro-fit of the community wash and shower house.

PARTIAL RETRO-FITS:

The partial retro-fits that were completed in Pelly Crossing were three double wide trailers that had been placed on crawl spaces. Upon completion of the initial designation of units in Pelly a very close assessment of the three units was undertaken by the Project Management trainee and the Instructors. It was determined because of the nature of construction of the units that doing a complete retro-fit wrap of the units would not be practical in terms of cost, as well as energy effectiveness of the work performed. In order to best utilize both materials as well as maintaining an integral energy efficient wrap on the buildings the following solution was undertaken. The ceilings of the respective units would be sealed as best as possible i.e. electrical wires penatrating interior partitions, plumbing stacks would all be sealed up in the attic. Additional insulation would then be placed in the attic bring the R-value up to an R40. The exterior walls would have a curtain wall placed around the units and sealed to the unit below the ring joist. The air leaks penatrating the joisting system in the crawl spaces would likewise be sealed up to insure that air leakage was minimized.

The three units had the soffits removed and the curtain wall attached to the rafters as well as secured at the ring joist with plywood gussets. This was done after the entire wall section was covered and sealed with 10mm ploy-urethene and the vapour barrier secured below the ring joist area. Upon completion of the erection of the curtain walls the units were insulated with a R20 insulation horizontially and a R12 insulation vertically being the effective R-value of the retro-fitted portion to an R32. New log siding was installed on all three units.

Units one and three had new windows and doors installed whereas unit two just had new doors installed and the old windows sealed up.

COMMUNITY WASH HOUSE AND SHOWER HOUSE:

The trainee and the Instructor undertook an inspection of the Community Wash and Shower House. It was determined that there was some serious problems in the wash house regarding ice buildup in the attic. The dryers were vented directly into the attic with no access to the outside other than the normal attic venting. This created a situation were there was massive condensation and ice buildup. The dryers were subsequently vented out through the machanical room to the outside of the building. The venting of the dryers was undertaken in such a fashion that during the winter months the warm air could be dumped back into the building to supplement heating costs.

UNIQUENESS OF TRAINING AREAS:

The Pelly Crossing project provided a number of truly unique examples of retro-fit work. The three units that had the partial wraps performed on them in Pelly were unique to the project, but not unique to the Territory

as a whole. One of the common forms of housing in the Territory are modular units or double wide units that have been put together and placed on crawl spaces. This was done during a time period when quick housing was required in various areas of the Territory. Because of the nature of the units they are extremely inefficient in terms of heat retension.

The challange in Pelly Crossing was to undertake a retro-fit that was not ridiculously expensive in terms of cost but would be effective in terms of reducing the overall heating costs of the unit. A complete wrap i.e. going over the top of the roof was prohibitive in terms of the dollars that the Band Council had available for the work. Thus the difficulty of dealing with the center joint of the double wides and the inability to get a good seal was one of the unique areas of training that was undertaken.

Likewise in terms of the community wash and shower house the reality exists in the communities that many of the services necessary i.e. washers, dryers, showers etc. are provided by the community rather that the individual home owners. This creates a situation were the facility must be rugged to withstand a series of stresses that would normally would not be placed on a building unit i.e. massive amounts of condensation etc. The rectifying of the problem in the wash house was very simiple i.e. the reventing of the dryers, but it did however cure a very serious problem.

Both the areas of uniqueness in terms of training that was undertaken will be applicable to the crew on an ongoing basis in other communities. The situation of both double wide trailers as well as community facilities

. like the community wash and shower house are realities in the rural communities.

COMMUNITY PROSPECTIVE:

Pelly Crossing is a predominatly Native community with very little services provided. Because of the nature of the community the job of the Project Manager was very cruitial. The areas of concern were in terms of providing accommodation for a crew as well as ensuring an adequate supply of building materials.

The concern from the community's point of view was to not create massive disruption within the community.

TRAINEES SKILL DEVELOPMENT:

PROJECT MANAGEMENT TRAINEE:

Thomas Harper was the Project Manager for the community of Pelly Crossing. Thomas went into the community two weeks prior to the crew arriving in Pelly Crossing. Thomas encountered a very difficult situation in the community of Pelly Crossing for the following reasons:

1) there was a complete change in the Chief and Council just prior to the project going into Pelly Crossing.
2) there was a change in the housing co-ordinator from the time that initial contact had been made and the assessment done prior to Thomas going in to begin the work of designation and expediting of materials.

This created a situation were Thomas was required to spend a lot of time with the Chief and Council as well as the housing co-ordinator re-explaining the program and ensuring its success. Too Thomas' credit this was accomplished most satifacturaly.

Thomas was able to secure the designation of the three units, prepare the mecessary material list take-offs, expidite the material to Pelly Crossing and secure accommodations for the crew.

Thomas' work load was involved in ensuring the adherence to very rigid work schedule as well as attempting to insure that the work could be accomplished in very adverse climatic conditions.

Overall Thomas performed very satisfacturaly under a series of very adverse situation i.e. a relatively isolated community, lack of availability of supplies within the community, lack of accommodations and adverse climatic conditions.

JOB FOREMAN:

Charles Morris was the Job Foreman on the crew in Pelly Crossing. Charles was specifically responsible for the overall supervision of the three housing units. The co-ordination of supervision was relatively easy in the community of Pelly Crossing. This was relatively easy because the three units were side by side. This allowed Charles to be able to designate the work allotment for the day as well as too insure that schedules were being adhered to.

The only time there was any split in the crew was when a crew went to complete the work on the community wash and shower house. This did not create any unnecessary problems due to the relatively short duration of time to complete this project.

PROJECT FOREMAN:

Joseph Buyck was the Project Foreman for the community of Pelly Crossing. Joseph's responsibility was to insure that the four specific jobs i.e. the three partial retro-fit wraps as well as the work to be completed on the community wash and shower house was completed on time and that all of the necessary materials were on hand for each of the specific jobs. One of the areas of difficulty that Joseph had to deal with was the difficulty regarding the delivery of doors and windows for the units. This necessatated a degree of shifting of work responsibilities and areas around to be able to complete the work on time. The problem arose because the production of the windows had been held up. This was successfully worked around in terms of work scheduling and immaginative supervision.

CAMP MANAGER:

Michael Frost was the Camp Manager for the community of Pelly Crossing. The Camp Managers job was somewhat complicated in the community of Pelly Crossing by the nature of ten trainees living in a three bedroom bungalow housing unit. The provisions for the cook and care of the premise was made difficult simply by the crowded accommodations.

In order for the camp to flow smoothly one of the things that Michael Frost set up was a very adequate removal of garbage and the quick and prompt delivery of supplies to the camp. When working in adverse conditions it is important if not imparative to insure that the food that the people are receiving is of good and adequate quality. If the food is of good and adequate quality then the amount of bickering and bitching is diminished.

CARMACKS PROJECT REPORT

PROJECT OVERVIEW:

Liaison began with the community of Carmacks in early December 1984. The Executive Director of the Friendship Centre made contact with the Band Administrator the first week in December to indicate that the Retro-fit project would be commencing work in Carmacks the first week in January. Norman Sam the Project Manager for Carmacks made an initial trip into Carmacks the second week in December. The Project Manager trainee accompanied by the Instructor/Advisor met with the Band Administrator as well as the Chief and Council.

There was concern in the Council that there was not sufficient dollars remaining in the Capital Renovation budget to successfully undertake a project in the community of Carmacks. The Band Administrator made an undertaking to the Band and Council as well as the Project Management trainee that overtures would be made to the Department of Indian Affairs to secure additional dollars to undertake a project of medium and low level retro-fit work within the community of Carmacks.

During the Christmas break, on the 27th of December the Project Manager, Norman Sam made contact with the Carmacks Indian Band. Contact was made in order to determine to what extent the overtures to the Department of Indian Affairs had been successful, and secondarily to begin the assessment and designation of units to be worked upon. The Band Administrator was not available, having gone to Vancouver for a series of meetings. The

new Chief and Council did not feel they were in any position to begin to make any commitments to the project prior to the Band Administrator returning to Carmacks. At this juncture the project was put on hold until the Band Administrator returned from Vancouver. The Project Manager, Norman Sam waited the return of the Band Manager from his trip to Vancouver. Upon the Band Managers return from Vancouver his resignation was tendered with the Carmacks Indian Band and he took a three week vacation leave prior to commencing his new job.

This put the Band Council in a very tenuous position in terms of attempting to proceed with the Retro-fit Renovation Project. At this time the Band Council indicated that they would not be proceeding with the Retro-fit Project in the community of Carmacks.

During the first week of January the Project Manager Norman Sam, the Project Instructor/Advisors and the Executive Director of the Centre worked at putting together a secondary project for the month of January. The project was split into two components:

1) the community of Whitehorse

2) pilot project in the community of Teslin

WHITEHORSE INDIAN BAND:

The project undertook an assessment and designation of eight units in the Kwanlin Dun Village. Of these eight units, low level retro-fits were performed on each of the units. The rationale from the Kwanlin Dun Bands position was that even though these units were slated

for replacement within the next two years it was justified doing a low level retro-fit on the units in order to make them more comfortable to live in, as well as more efficient in terms of heat utilization. The low level retro-fits included the installation of new doors, the construction of insulated exterior doors, weather stripping of exterior doors,sealing of all windows, removal of base trim and sealing between the wall and floor, removal of trim and sealing of new vapour barrier around rough window openings and sealing up attic hatches.

TESLIN:

A pilot project was initiated in Teslin. The pilot project consisted of the interior retro-fit of the long house. This project was undertaken by the Chief and Council utilizing the trainee from Teslin Mr. Raymond Douville. The intent of the pilot project was that it would provide an impetus for other Bands to begin undertaking specific projects on their own. The interior retro-fit consisted of the complete installation of a vapour barrier on the walls and ceiling, the leveling of the floor joist system in the long house, the securing of the vapour barrier to the existing windows, the fabrication of new interior walls, the installation of insulation in the cavity between the new walls and the old walls as well as the new joist spacing, new dry wall on the ceiling and new half round log siding on the inside of long house.

UNIQUENESS OF TRAINING:

There were a number of new areas for involvement and consideration by the trainees. These areas were primarily two in nature:

1) a project that for whatever reason did not go through. The reality of any form of developmental work, construction projects, renovation projects is that some of these projects simply will not materialize. They will not materialize for a number of reasons. Those reasons may well be someone not doing the job they had indicated they would do, as was the case with Carmacks, lack of funding, lack of commitment on behalf of the people undertaking the project, or any combination of reasons or other reasons not mentioned here. It is important however that the projects continue in developing the ability to deal with the unknown.

2) the Teslin project being a pilot project undertaken solely on the initiative of the trainee from Teslin Raymond Douville and the Chief and Council. This initiative provides an excellant example for other Bands of the method in which utilization of the training and information transfer to the community can be transferred to actual concrete gains for the community.

COMMUNITY PROSPECTIVE:

The community prospective will be dealt with in terms of the three specific communities involved.

CARMACKS

The community of Carmacks had initially been very interested in undertaking a retro-fit project in their community. Unfortunately the community of Carmacks suffered from two variables which they were unable to solve. One of those variables being the election of a new Chief and

Council, who were unfamiliar with the details of the program and number two the resignation of the Band Administrator who had been controlling the development of the project up to that period in time. The unfortunate aspect is that subsequently the community of Carmacks did not receive any of the benefits of the program, either in terms of physical work accomplished or in terms of information transfer regarding energy-efficient construction techniques.

WHITEHORSE INDIAN BAND

The Kwanlin Dun Indian Band viewed the January project as a benefit in terms of additional work that could be undertaken by the project. The retro-fit project would be returning to Whitehorse for the month of March. The additional work that was to be done during the month of January in Whitehorse was considered to be simply an added benefit to the Kwanlin Dun Indian Band. It would mean that additional work could be undertaken in new areas that the Band had not previously had the capacity to undertake.

TESLIN

The Teslin Indian Band was able to develop the pilot project utilizing the additional labour component that the retro-fit project would be able to provide, as well as additional funds that they were able to secure from C.M.H.C. as well as the Department of Indian Affairs. The impetus for the program was based upon the availability of the labour component as well as the initiative of the community of Teslin in undertaking the first community based energy-efficient retro-fit project.

TRAINEE SKILL DEVELOPMENT

Project Manager Norman Sam. Norman Sam undertook the necessary liaison as well as interfacing with the Carmacks Indian Band as well the Band Manager for the community of Carmacks. The unfortunate occurance of the community of Carmacks pulling out of the program left a situation were Norman Sam was not able to undertake the Project Manager position in the community of Carmacks. While the project was in the community in Whitehorse Norman Sam provided the Project Management and liaison with the Kwanlin Dun Indian Band. Norman's responsibilities were to ensure that the assessment that was undertaken and the designation of units were in agreement with the Kwanlin Dun Indian Band. Norman undertook the necessary material take offs, the ordering and expediting of materials to the appropriate sites as well as the designation of the people to work on specific units.

JOB FOREMAN

Thomas Harper fullfilled the role of Job Foreman in the Kwanlin Dun project. Thomas' responsibility was specific in nature in terms of supervising the construction of exterior insulated doors at the Kwanlin Dun woodworking shop. Because of the time constraints on the project Thomas' responsibility was specific in nature, it was the on site supervision of door construction.

PROJECT FOREMAN

Michael Frost was the Project Foreman for the Whitehorse project. Michael's overall responsibility was to provide for the co-ordination and insurance of the delivery of materials to each of the eight projects.

Because of the limited time to complete the low level retro-fits it was important that the Project Foreman keep in close liaison with the Project Manager and the Job Foreman in ensuring that materials and personel were available for each of the prospective jobs.

CAMP MANAGER

Charles Morris was the designated Camp Manager for the community of Whitehorse. Because of the fact that the trainees where in Whitehorse were the majority of the trainees have temporary residences a camp as such was not established. It was however Charles responsibility to ensure transportation for the individual trainees to the work site as well as assisting in any other specific areas of difficulty i.e. rental accommodations etc. Part of Charles responsibility was to ensure and maintain morale on the project. Because of the specific changes that had occurred during the month of January with Carmacks opting out of the project it was vitally important to ensure good morale for the project.

TESLIN TRAINEE

Raymond Douville undertook the Project Management of the Teslin project. Raymond was responsible for the estimating, expediting of materials, supervision of the crew as well as progress reports to the Teslin Indian Band.

BURWASH LANDING PROJECT REPORT

PROJECT OVERVIEW:

The retro-fit project undertook two specific areas of work within the community of Burwash Landing:

1) one medium level retro-fit
2) seventeen low level retro-fits

The project in Burwash Landing was unique in the context of the inclusion of the community of Beaver Creek. Because of the factor of very few Native housing units in the community of Beaver Creek, the assimulation of the two communities was undertaken for the purposes of the retro-fit project. This created a situation where it was necessary to have the necessary co-ordination as well as co-operation from the two communities to complete allotted work. The two communities being separated by approximately one hundred and thirty five miles.

MEDIUM LEVEL RETRO-FIT:

The medium level retro-fit that was undertaken in the community of Burwash was an older log dwelling. The doors and windows were replaced in the unit utilizing fabricated wood insulated doors. This was supplemented with a wooden storm door on both the front and rear entrances of the dwelling unit. The windows were replaced utilizing a locally built wooden window. It is important in terms of the medium level retro-fit that the log dwelling be treated as an integral unit. In treating it as a such the Project Manager in conjunction with the Advisor decided that it was important that the individual logs be rechinked. This was done in order to facilitate a tighter air seal

on the log units. The rechinking was done with a styrofoam sealent in order to obtain a air tight seal. The baseboard trim was removed throughout the unit and a seal secured to the floor joist and the bottom log of the unit.

LOW LEVEL RETRO-FITS:

During the coarse of the project in Burwash Landing some seventeen low level retro-fits were performed. Of the seventeen low level retro-fits three of these were undertaken in the community of Beaver Creek. The low level retro-fits included the following areas of work:

- weather stripping of doors
- resecuring of weather stripping on doors
- sealing up attic hatches
- sealing up windows
- the removal of baseboard trim and sealing the bottom plate or log as appropriate to the floor unit
- rehanging doors if necessary
- installation of electrical outlet gaskets
- sealing chimnies on wood stoves
- sealing up major air leaks in the attics

The attic sealing work was restricted to electrical wires leading into interior partitions, plumbing stacks penetrating the ceiling membrane as well as chimnies penetrating the ceiling, and roof areas.

UNIQUESNESS OF TRAINING:

There are specifically two major areas of innovation with regards to Burwash and Beaver Creek. These two areas of innovation were as follows:

1) the fact of the two communities, Burwash Landing and Beaver Creek being separated by substancial distrance ie. one hundred and thirty five miles

2) the wide variety of housing units on which low level retro-fits were undertaken

Regarding the first point it is important to stress that the inclusion of Beaver Creek into the Burwash project was considered as a request of the Project Manager from the community of Burwash Landing. Bobby Johnson in his role as Project Manager felt that it was important to not isolate and ignor the community of Beaver Creek. Since the members of the Beaver Creek Indian community are related to the Indian community in Burwash Landing it was felt that it would be appropriate to combine the two communities.

The later regarding the variety of housing units it must be emphasized that the majority of housing units in Burwash Landing and Beaver Creek were log housing units. This was the first opportunity that the crew had with extensive low level retro-fit work in log housing units. There were however a wide variety of housing units ie. log housing units, double wides, modular homes as well as conventional framed houses.

COMMUNITY PROSPECTIVE:

The community of Burwash Landing is predominately Native, whereas predominance within the communty of Beaver Creek is non-Native. The Band and Council in Burwash Landing were undergoing major changes and re-organization within the Band structure. The Chief and Council are working very closely with the Department of Indian Affairs towards the end goal of a revamped administration and financial accountability system established within the Band administration. To this end the Band Council has

employed through a secondment a Band Administrator from the Department of Indian Affairs. This created a unique situation whereby additional funding that the Band needed specifically for the retro-fit project were available with relative ease of access from the Department of Indian Affairs. The community as a whole supported the retro-fit project most substancially. The community hall was provided as both living accommodation as well as kitchen facilities for the establishment of the camp. This included the suppling of wood and water for the project.

TRAINEE SKILL DEVELOPMENT:

PROJECT MANAGEMENT TRAINEE:

Bobby Johnson was the Project Management trainee for the community of Burwash Landing, with Richard Johns providing the Project Management co-ordination for the work performed in the community of Beaver Creek. The initial contact with the Burwash Band as well as the individual homeowners in Beaver Creek was undertaken jointly by Bobby Johnson and Richard Johns two week prior to the project going to Burwash. Upon completion of the initial assessment and designation of units Bobby established with the Band Administrator the usage of the community hall as well as storage facilities for food preservation with the Band Council at their local store.

Once the material take-offs were completed and the material expedited to the community the rest of the crew moved into the community of Burwash. Because of the large number of units that were undertaken in terms of low level retro-fits the project required a sophisticated degree of co-ordination both of crews as well as materials to the appropriate sites.

During the one day excursion to the community of Beaver Creek the logistics of getting the crew as well as the material to the community in sufficient time to perform the necessary work on the three units and back to the community of Burwash for late in the evening was an arduous task indeed. Mr. Johns in co-ordination with Bobby Johnson was able to successfully complete the work in Beaver Creek.

JOB FOREMAN:

During the Burwash project Norman Sam was the Job Foreman. This was a particularly difficult task in the community of Burwash because of the number of specific jobs that were being undertaken. To this end the Project Foreman on the Burwash project Charles Morris and Norman Sam performed joint roles within the context of the project. It was of crucial importance that both the scheduling of man power to the specific designated units as well as the delivery of material and supplies be well co-ordinated.

An important aspect to bear in mind is the flexibility with which the Project Manager approached the job in Burwash. That was of taking the two positions of Job Foreman and Project Foreman and indicating that because of the nature of the work being performed, the split communities, as well as the time constraints that it was necessary to combine those two job descriptions into one and designate the work equally to both of the individuals. This innovative move proved to be most effective in terms of achieving the end result of a successful project in Burwash.

CAMP MANAGER:

The position of Camp Manager was assumed by Thomas Harper. Thomas' job was responsibility for the co-ordination of the delivery of food stuffs, the removal of garbage, the ensuring of adequate wood supply, the ensuring of an adequate water supply, as well as establishing clean-up details for the hall and kitchen area.

WHITEHORSE PROJECT REPORT

PROJECT OVERVIEW:

Originally the project was to be the vapour barrier, and insulation (energy-efficient component) of the construction of the Kwanlin Dun pre-fab housing production plant. The material and the pre-fab components of the plant did not arrive in time for the retro-fit project to undertake the initial work for the Kwanlin Dun Band. The project then proceeded to look at two destinctive areas of involvement:

1) a continuation of some low level retro-fit work for the Kwanlin Dun Band
2) a high level retro-fit of the Yukon Conservation Society's building in Whitehorse.

The low level retro-fit work that was completed for the Kwanlin Dun Band consisted of one medium level retro-fit and five low level retro-fits within the Kwanlin Dun Village.

The work undertaken on the Yukon Conservation Society building was high level retro-fit. The high level retro-fit included sealing work that was completed in the attic, the blowing of fibre glass insulation into the attic to an R40 component and the curtain walling of the exterior of the premise to increase the R-value to an R24 in the new curtain wall section.

KWANLIN DUN:

Of the six units that had work performed on them for the Kwanlin Dun Band the medium level retro-fit was

a designated unit that will not be slated for replacement for possibly three or four years. This would be right at the end of the relocation project, thus the rationale for the additional expenditure and work performed on the unit. The medium level retro-fit included replacement of doors and windows as well as attic sealing, window sealing, removal of trim around the base of the unit and the sealing of the sole plate to the sub-floor, as well as sealing up the chimney access to the unit. The five low level retro-fits were undertaken on the balance of housing units in the Village as well as two of the new units that were built up in Hillcrest. The low level retro-fits consisted of weather stripping doors, sealing windows, removal of baseboard trim, sealing of sole plate to the sub-floor, removal of trim around windows and doors and the insertion of and sealing up of a vapour barrier around the rough openings.

YUKON CONSERVATION SOCIETY:

The high level retro-fit that was performed on the Yukon Conservation Society premise consisted of attic sealing i.e. plumbing stack, electrical wires, chimney penetrations and the blowing of a R40 fibre glass insulation into the attic. Upon completion of this aspect, the exterior walls were covered and secured with 10mm ploy-ethelene vapour barrier, two by four curtain wall secured to the tail ends of the rafters and to the ring joist area with plywood gussets were installed. The doors and windows were boxed out to except the installation of new window and door trim on the outside of the retro-fit. A total of R24 was installed in the new curtain walls system, the initial R12 installed horizontally the second outer R12 installed vertically. The unit was then wrapped in Tyvec and new half round log siding applied to the exterior of the building.

UNIQUENESS OF TRAINING:

The major area of uniqueness with respect to the Whitehorse project has been two fold:

1) it is the first community that has required rigid adherence to building codes as well as working specifically with building inspectors. This required the Project Management Trainee to be involved in the application for a building permit as well as the ensurance of the adherence to that building permit as well as all other aspects of building codes.
2) the work with the Kwanlin Dun Band on the pre-fab housing production plant. The production plant provides an opportunity by involvement in the project of the individual trainees in each of their communities, the opportunity to work during the winter months in the pre-fab plant producing housing unit components of an energy-efficient nature, and then spending the summer months back in their own communities erecting the pre-fabbed units.

COMMUNITY PROSPECTIVE:

The Kwanlin Dun Indian Band is attempting to provide a much broader Yukon Territorial base to the operation of the Pre-fab plant that is proposed for the Kwanlin Dun Band. This would provide a situation whereby the twelve bands throughout the Territory would have an opportunity to purchase units directly from the Kwanlin Dun Pre-fab Plant, on a strickly purchase basis or on a involvment as a shareholder of the Production Plant.

To accomplish this end the Kwanlin Dun Band has been working very closely with the ten trainees in terms of providing both information as well as opportunity for the trainees to become involved in the pre-fab production plant project.

In terms of the work being done for the Yukon Conservation Society the project has exposure to a much wider community base ie. the total community of Whitehorse as opposed to a more limited community within the context of the rural communities. This will provide an opportunity for exposure of the quality of workmanship as provided by the trainees for this project.

TRAINEE SKILL DEVELOPMENT:

PROJECT MANAGER TRAINEE:

Vincent Smarch assumed the role of Project Manager for the Whitehorse project. Vincent was assisted in the Whitehorse project by Richard Johns who also played a role as a Project Manager trainee. Vincent was responsible for the co-ordination with the Kwanlin Dun Band as well as the initial co-ordination with the Yukon Conservation Society. Richard became involved with the project with the Yukon Conservation Society. Vincent Smarch began liaison with the Kwanlin Dun Indian Band two and one half weeks prior to the commencement of the project in Whitehorse. An additional two or three days lead time was provided regarding the project in Whitehorse because of anticipated difficulties with the project as outlined by the Kwanlin Dun Band. The Kwanlin Dun Band wanted not only the involvement of the crew in the physical construction of the pre-fab production plant, but also involvement by the project trainees in the concept of the pre-fab plant and the Territorial involvement of the Indian Bands. Vincent's role was two fold in nature:

1) the assessment, material take-offs, expediting of work, scheduling of work and supervision of work
2) assisting in the transfer of information regarding the pre-fab production plant project.

Vincent was also involved in the initial meetings with the Yukon Conservation Society until such time as that project was turned over to Richard Johns. Richard's involvement with the Project Management of the Yukon Conservation Society's building was in terms of liaisoning with the client, the material list take-offs, the expediting of materials, the scheduling of work crews and supervision of the overall job performance.

JOB FOREMAN:

The position of Job Foreman was assumed by Bobby Johnson during the Whitehorse project. Bobby was responsible for the Yukon Conservation Society high level retro-fit wrap. Bobby's responsibility was to liaison with the Project Foreman as well as the Project Manager to ensure adequate supply of materials as well as maintaining and supervising the crew.

PROJECT FOREMAN:

Thomas Harper was the Project Foreman for this stint. Thomas' responsibility was in terms of ensuring that both the project at the Kwanlin Dun Band as well as the Yukon Conservation Society were proceeding along schedule. Also, Thomas's responsibility was to ensure the transportation of individual crew memebers to appropriate jobs as well as ensuring the smooth flow of the project.

CAMP MANAGER:

Norman Sam was the Camp Manager for the Whitehorse project. There was no specific camp as such in the community of Whitehorse. However, a part of the Camp Managers responsibility is to ensure project morale as well as to assist individuals with securing accommmodation if that is necessary.

SKOOKIES II RETROFIT RENOVATION PROJECT
TRAINING OUTLINE

The following training outline will include the various job positions that each of the trainees will assume over the course of the training program. As outlined the trainees will undertake training in four specific areas; project management, job foreman, project foreman and camp manager. This training will be over and above the specific training provided over the context of the overall training program. The training outline is developed in the following fashion; prior to commencing work in the designated community the Project Management Trainee will go into the community two weeks prior to the commencement of work to accomplish the necessary assessments, designation of units as well as expediting the necessary materials. During the course of work in the designated community the Project Management Trainee will assume all of the duties and responsibilities as listed under that specific training program. The various identified jobs will be filled by respective personnel as outlined on the training outline.

PROJECT MANAGEMENT TRAINEE - (6 weeks)

The training outlined for this position will be as follows:

- liaison with the community and the band
- preparing an assessment of the housing stock at the band level
- designation of the housing units and the work to be performed on those units
- Preparation of material lists and costing
- expediting of materials to communities
- maintenance of the inventory on site
- arranging for sub-trades
- recommending payment to the band for material expedited or sub-trade work performed

- scheduling for appropriate crews
- ensuring quality of workmanship
- arranging and conducting daily site meetings at 8:30 a.m.
- preparing inventory and accounting for disposition of unused materials
- ensuring liaison with householder
- ensuring security of units while under renovation
- recommendation on personnel management
- acquiring accommodations or site locations for the establishment of camp
- arranging for removal of garbage, water and sewage
- ensuring overall supervision and smooth flow of the project
- assist in preparation of weekly project reports
- preparation of tabulated report oulining material on a per job basis (this tabulation would be the project summary report)
- recommendation on payroll submission
- supervise and advise camp manager

JOB FOREMAN TRAINEE - (4 weeks)

This position would be assumed by the previous Project Management Trainee. The training outlined for this position will be as follows:

- designating work to individual crew members
- supervising to ensure quality of workmanship and adherence to work schedule
- active participation in site meetings
- recommending to the Project Manager any necessary materials required and/or sub-trades
- maintain time book for his crew
- review daily journal every 5 working days
- report payroll to Project Management Trainee based on journal review

- review daily journals to ensure accuracy with time book
- report daily to Project Management Trainee on work progress
- maintenance and operation of company or community tools and equipment.

PROJECT FOREMAN TRAINEE - (4 weeks)

This position shall be assumed by the previous Camp Manager Trainee. The training oulined shall be as follows:

- all of the duties as listed for the Job Foreman
- supervise and advise job foreman
- assist in design and implementation of design on designated units
- communicating time sheets to the Skookum Jim Friendship Centre for payment
- responsible for maintenance and operation of vehicles
- assist project manager with the overall quality of workmanship and materials used

CAMP MANAGER TRAINEE - (4 weeks)

This position shall be assumed by the previous Job Foreman Trainee. The training shall be as follows:

- arrange for the ongoing supply of water
- the disposal of sewage and garbage as necessary
- responsible for maintaining the public health and safety and cleanliness of the camp to meet the necessary public health standards
- responsible for designating rotating job roster to maintain camp operations

GENERAL TRAINING OUTLINE FOR ALL TRAINEES - (14 weeks)

The important element to bear in mind with respect to the training that the Skookies II Project is undertaking is

that the project encounters unique and different situations in each of the rural communities that the project is involved in. These areas include retrofitting of old log buildings, new log buildings, old existing frame buildings, new construction frame buildings as well as small scale commercial i.e. band halls etc. Through the process of assessment and designation of housing units the most difficult and unique units are allocated for retrofit renovation work by each of the communities. Thus providing for the trainees a very unique experience of gaining the benefit of the retrofit work in each of the communities in a very unique fashion. The following will outline the overall training to be provided to all of the trainees:

- to learn to recognize the effects of perma-frost on existing buildings
- to undertake an analysis of the ice-lenziling occuring under footings
- to determine proper method of dealing with perma-frost situations regarding footings and foundation walls
- to undertake proper analysis and recommendation of action for dealing with perma-frost under basement floors
- to recognize geological locations of perma-frost with respect to layout of the landscape within a community
- to undertake proper investigative approach to the location of buildings in an area where perma-frost is in existence
- to be able to undertake the analysis and necessary work to retrofit an old log structure
- to be able to undertake the analysis of and undertake the performance of the work for an interior wrap
- to do an analysis and perform a retrofit wrap of an existing frame building
- to undertake the analysis and perform the work on a new frame building
- to maintain a daily log of work performed and time spent on a per job basis
- providing and maintaining tools in a adequate state to perform the job

- maintaining the camp in an overall orderly fashion
- providing their own necessary personal effects i.e. toilet items, clothing, bedding and tools
- maintain proper conduct conductive to maintaining a

COMPENTENCY

Over the course of the 1280 hours it is expected that the trainees will become accomplished in all of the areas outlined within this training program. Upon completion of the training each of the trainees will have had eighteen weeks of extensive training in project management, job foreman, project foreman and camp manager. These four specific areas will be over and above the training undertaken on the general training outline covering all of the trainees.

EXPECTED OUTCOME OF TRAINING

It is anticipated that upon completion of the training outline each of the trainees will be able to provide for their respective bands or community, the proficiency to perform the function of either a project manager on a specific job, a job foreman's responsibilities, a project foreman's responsibilities, or a camp manager's responsibilities. In conjunction with the chief and council of each of the respective communities each of the trainees upon completion of the training program will have a job with the band either as a housing co-ordinator or as a community energy specialist.

The level of compentency upon completion of the training will allow each of the trainees the option to either work directly at the band level, which is the anticipated and hoped for outcome, or to become activily involved in the industry, bidding independently on contracts issued either by the community, band or the government.

TOPICAL OUTLINE

SKOOKIES II RENOVATION PROJECT

A. Site Safety

B. Tools (Use and Maintenance)

1. Hand Tools
2. Small power tools
3. Stationary power tools

C. Blueprint Reading

1. Site plans
2. Floor plans and elevations
3. Details and specifications
4. Mechanical and electrical specifications

Re: Design-optimizing volume to surface area
What to look for on plans
1. what constitutes good detail on retrofit blueprints
2. insist upon architect incorporating these details
3. corner detail, plumbing stacks dryer venting, combustion air

D. Site Preparation

1. Site selection
2. Site plan
3. Layout and excavation

1. Orientation
2. Berming
3. Vegetation
Taking advantage of natural landscaping

E. Footing and Foundations

1. Base preparations
2. Footing layout, leveling and forming
3. Foundations - types construction

1. Footing insulation
2. Frost baffles, preparation for retrofit
3. Excavation considerations

F. Concrete Work

1. Forming
2. Reinforcing
3. Pouring
4. Finishing

1. Basement floor - insulation?
2. Radiant floor
3. Concrete as thermal mass and storage - where to locate, sizing it

G. Flooring Systems

1. Joist planning
2. Layout
3. Blocking
4. Sheathing
5. Vapour barrier considerations

1. Cartilever problems
2. Dealing with owner/organization design desires with respect to balconys, cantelevers, split levels, unheated crawl spaces, plumbing and mechanical
3. Dealing with vapour barriers/ring joists

H. Framing

1. Blueprint review
2. Standard framing
3. Double wall techique (framing and vapour barriers)
4. Opening layouts
5. Stud layout
6. Interior partitions

1. Truss systems in new construction
2. Vapour barrier penetrations as a hex, ranges
3. Vapour barrier on split construction
4. Window and door openings

I. Retrofit Framing

1. Preparation below grade
2. Existing structure modifications
3. Secondary wall layout
4. Vapour barrier installation

1. Vapour barriers - theory
2. Vestibules
3. Overhang considerations
4. Half wrap - full wrap
5. Attic vapour barriers, vents chimneys
6. Partition walls
7. Interior vs. exterior retrofit

J. Roofing

1. Layout
2. Truss systems and construction
3. Basic rafter construction
4. Rafter variations
5. Retrofit roof framing
6. Sheathing
7. Shingling and various roofing surfaces
8. Finishing

1. Techniques for joining wall:roo
2. Vapour barrier continuity
3. Stan: cathedral ceilings
4. Ventilation requirements-results of inadequate ventilation
5. Color of roofing

K. Doors and Windows

1. Preparation of rough openings
2. Wrapping (re: vapour barriers)
3. Plumbing and installation
   - windows
   - hanging doors
   - construction of jamb systems

1. Selection of hardware, doors and windows
2. Preparation and installation
3. Problems with existing doors and windows
4. Retrofit considerations: boxing in
5. Window insulation

L. Exterior Finish

1. Review of exterior finishes
2. Siding application
3. Surface finishing
4. Detail finishing

1. Anomalies in exterior finishing for diagnosis of problems
2. Energy - heat loss considerations
3. Reflective siding
4. Thermal mass
5. Color

M. Insulating

1. Types of insulation
2. Wall insulation techniques
3. Ceiling insulation - ventilation
4. Below grade insulation
   - frost baffles
   - interior vs exterior
5. Floor insulation

1. RSl factors
2. Advantage and limitations
3. Cost considerations
4. Retrofit situations (old insulation materials)

N. Vapour/Air Barriers

1. Windows and doors
2. Floor and ceiling
3. Electrical outlets
4. Mechanical penetration
5. Corners and overlap
6. Flocr joist variations

O. Interior Finishing

1. Daywalling/panelling
2. Overlay flooring
3. Interior doors
4. Door and window casings and baseboards
5. Basic cabinet making
6. Flooring
7. Basic surface finishing

1. Weathersealing
   - weatherstripping and caulking
   - where to look for air leaks

P. Basic Stairs Construction

1. Site measurements
2. Wood selection
3. Stair layout
4. Stringer and stair construction
5. Handrails
6. Finishing and surfacing

Q. Environmental Quality

1. Air quality considerations
2. Vapour considerations

1. Overview and review
2. Living in an energy efficient home
3. A/A Hex.

R. Estimation (delivered to individuals with appropriate trade experience)

1. Material takeoffs
2. Sub-trades estimates
3. Overall construction estimates
4. Construction phasing

12.0 ACKNOWLEDGEMENTS

The Skookum Jim Friendship Centre would like to acknowledge the involvement of the various government departments in the funding of the Skookies II Project.

- the CREDA Department
- Canada Employment and Immigration
  General Industrial Training
- Department of Indian & Northern Affairs

A special thanks to the Instructor/Advisors on the project as well as the ten trainees and their respective communities.

Energy, Mines and Resources Canada | Énergie, Mines et Ressources Canada

Yukon
Department of Mines and Small Business

Skookum Jim Community Training

Final Project Summary

Canada/Yukon Conservation and Renewable Energy Demonstration Program

Project No.:
3766-4-29

Date:
March, 1985

Sectors:
All sectors

Project Locations:
Throughout Yukon

Technology:
Conservation

Jurisdiction:
Yukon

Project Manager:
Mr. Stan Boychuk

Status:
Complete

Purpose:

To demonstrate energy efficient retrofits to the residents of Yukon's 10 Indian communities.

Description:

Ten native carpenters, trained in energy efficient retrofit techniques, spent one month in each of nine native communities performing total re-wraps, low-level and medium-level retrofits on private dwellings and community buildings.

Contributors:

Canada	$58,741
Yukon	19,580
	$78,321

Materials supplied by local bands.

Demonstrated Benefits:

1. Increased local awareness of energy efficient construction standards.
2. Increased construction skill level in communities.
3. Energy savings: 60,000 litres of oil per year.
4. Better quality housing in native communities.

Further Information:

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Mr. David Areseneault, Information Officer, Mines and Small Business, Government of Yukon, Box 2703, Whitehorse, Yukon (403)667-5384.

Economic Analysis:

The retrofit crews worked on approximately eight houses in each community, with an estimated fuel saving of 20 per cent per house. Based on the nationaT comsumption average (north of 60) of 4,100 litres, the annual savings could be in the order of 60,000 litres of oil equivalency.

Technical Details:

The houses to be considered had a visual audit and a written report done on them. Based on these, Band Council members and Skookum Jim staff determined what work was to be done. Because of the extremely low standards of native housing in Yukon, each house represented a separate approach to retrofitting.